Remarks

Applicants have received and carefully reviewed the Office Action mailed December 7, 2005. Claims 1-9 remain pending. Claim 6 has been amended to correct a typographical error. No new matter has been added. Reconsideration and reexamination are respectfully requested.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 6-9 are rejected as being indefinite. Claim 6 has been amended to clarify the first pump is connected to the pre-concentrator.

Rejection under 35 U.S.C. § 103(a)

Claims 1-9 are rejected as being unpatentable over Wise et al. (US 6,838,640), Rounbehler et al. (US 5,300,758), and Philips et al. (US 5,196,039). Applicants respectfully traverse the rejection.

The Examiner asserts that Wise et al. teach a fluid analyzer including a pump 22, a pre-concentrator 28 with a plurality of parallel channels, a multi-zone separator 31 connected to the pre-concentrator, the separator having parallel channels and detectors, and a plurality of individually-controllable heaters along the channels of the separator in each zone. The Examiner acknowledges that Wise et al. fail to teach a concentrator connected to the pre-concentrator or first and second pumps connected to the pre-concentrator and separator. The Examiner then asserts that it would have been obvious to one of ordinary skill in the art to employ more than one concentrator as taught by Rounbehler et al. to permit rapid concentration of vapors.

Applicants respectfully disagree. Wise et al. teach a miniaturized micro-gas chromatograph having a pre-concentrator, filtered inlet, calibration source and polar/non-polar columns etched into a silicon substrate. Rounbehler et al. teach a system including first and second gas chromatographs, first and second prolyzers, and two series-connected vapor concentrators positioned ahead of the first gas chromatograph. See column 2, lines 7-12 and 28-31. Rounbehler et al. also teach that concentration, injection, and separation of vapors is

controlled by a control circuit and computer, where the control circuit senses resistance of small diameter metal tubes of the vapor concentrators and gas chromatographs as voltage is applied the current is flowed through the tubes to heat vapors therein. See column 2, lines 31-45. Rounbehler et al. thus appear to teach a conventional, large gas chromatography system involving multiple, separate, components through which the gas sample travels for analysis. See FIG. 1 and column 3, lines 59-66. Applicants submit that there is no motivation provided in either Wise et al. or Rounbehler et al. for combining their teachings. Additionally, there is no motivation for one of ordinary skill in the art to combine the compact micro-gas chromatograph device of Wise et al. with the conventional, large scale, multi-component device of Rounbehler et al. Further, even if one were to attempt such a combination, it is not clear how the teachings would be combined. Wise et al. teach a low-power, battery-operated, low thermal mass structure for providing fast response time in a portable micro-device. It is unclear how one would add a series-connected vapor concentrator, such as that taught by Rounbehler et al., to the device of Wise et al. Applicants submit that the only motivation for combining the teachings of Wise et al. and Rounbehler et al. is found in the instant specification, which is improper.

The Examiner also asserts that it would have been obvious to one of ordinary skill in the art to modify the individual heating elements taught by Wise et al. and use instead the heater of Philips et al. within the channels of the pre-concentrator of Wise et al. to provide thermal modulation to accumulate and focus, refocus and then accelerate a concentration pulse in the carrier stream without the loss of orthogonality. Applicants respectfully disagree. Philips et al. teach a two-dimensional chromatography system in which thermal modulation is used to focus, refocus and accelerate a concentration pulse through two dimensions to separate chemical components of a sample. See column 4, lines 38-59. The methodologies and systems of Wise et al. and Philips et al. are vastly different and Applicants submit that there is no motivation for combining their teachings. Additionally, it is not clear how one of ordinary skill in the art would accomplish such a combination. Philips et al. teach a device in which the outlet of a first column is connected to the inlet of a second column. The thermal modulator is taught as being connected between the outlet of the sample injection device and the inlet of the first column or

between the outlet of the first column and the inlet of the second column. See column 5, line 43 through column 6, line 5. It is not clear how the thermal modulator of Philips et al. would be connected to the micro-gas chromatograph of Wise et al. Applicants submit that there is no motivation to combine the teachings of Wise et al. with either Rounbehler et al. or Philips et al., and that even if one were to make such a combination, the resulting device would not appear to operate as taught by Wise et al. Additionally, such a combination would not result in the device presently claimed. Reconsideration and withdrawal of the rejection are respectfully requested.

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims 1-9 are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-677-9050.

Respectfully submitted,

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